RECONSTRUCTION OF THE MOUTH

After Loss of the Under Lip

BY A NEW OPERATION

By GURDON BUCK, M. D. No. 46 W. 29th St. New-York City

Visiting Surgeon of the New York Hospital and Presbyterian Hospital; Consulting Surgeon to St. Luke's Hospital and Roosevelt Hospital

Reprinted from The American Practitioner for August, 1873

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RECONSTRUCTION OF THE MOUTH.*

Hugh B., a resident of New York City, aged thirteen years, of rather slender constitution, though ordinarily enjoying good health, came under surgical treatment in October, 1869, in consequence of the loss of the entire under lip following an attack of scarlatina, of which his mother gave the following account.

When six years old he was taken sick with scarlet fever, and became dangerously ill. The eruption was scanty, and in other respects the disease was irregular in its development. Sloughing of the lip succeeded, and with it inflammation, involving the parts around the lower jaw on both sides. Necrosis followed, and considerable portions of the maxilla were cast off.

The condition of his face when I first saw him was as follows: The entire under lip was gone, and the skin below the lip on the right side of the chin had been destroyed to within a finger's breadth of the edge of the jaw. On the left side of the chin the destruction of the parts had not extended as low down. The upper lip was of ample dimensions, and both angles of the mouth were entire and somewhat drawn

*Communicated at the annual meeting of the New York State Medical Society, February, 1873.

down by the contraction of the neighboring parts during cicatrization. The right half of the tongue adhered by its under surface to the floor of the mouth as far forward as the alveolar border of the maxilla in front. Its extremity also was held fast, and was exposed to view from the absence of the under lip. That portion of the body of the lower jaw which is situated between the symphysis and last molar tooth of the right side had previously come away entire, and the alveolar sockets of all the teeth belonging to it could be identified; the last molar tooth alone still remained *in situ* inside the mouth. A much smaller portion from the left half of the jaw also exfoliated. It consisted of alveolar border supporting the sockets of the two bicuspid and two neighboring molar teeth. The extensive loss of bone on the right side has been quite perfectly supplied by new bony product along the inferior border of the maxilla; thereby a solid support is afforded and the symmetrical form of the face preserved. The canine tooth is the only one remaining *in situ* in the left half of the lower jaw, and the last molar the only one in the right half. Articulation is but little affected. The patient suffers the greatest discomfort and annoyance by the constant flow of saliva from the mouth. Owing to the deficiency of teeth he has been restricted to the use of liquid and soft solid food. His general health is good.

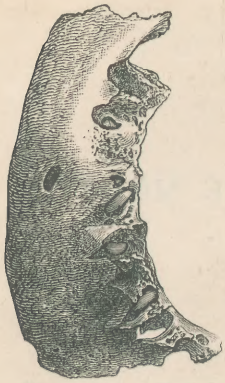

FIG. 1. Right half of the body of the lower jaw.

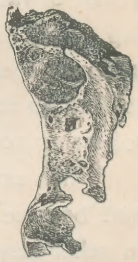

FIG. 2. Portion of alveolar border from the left half of the lower jaw.

FIRST OPERATION.

The first operation was performed on the 6th of October, 1869, at the patient's residence, with the aid of Prof. A. C. Post and Drs. Bell and Beekman. Ether anæsthesia was

employed in this as in all subsequent operations. The procedure was as follows: The right cheek was detached from the lower jaw, on the inside of the mouth, backward to a point a little beyond the edge of the masseter muscle, and downward to the lower edge of the jaw-bone. An incision, commencing upon the right cheek at a point below the middle of the zygoma, was carried downward and forward in a curved direction, with its convexity looking posteriorly to a point half an inch below the angle of the mouth. After turning up the flap thus formed and exposing the cavity of the mouth, I divided the mucous membrane along the anterior edge of the masseter muscle upward to the malar process, and thence forward along the line where it quits the maxilla to cover the inside of the cheek as far as the upper canine tooth. This liberation of the parts permitted the entire flap to be glided forward edgewise till its anterior edge reached the symphysis. The same procedure was executed on the left side of the face. The arteries were secured as fast as they were encountered, thus avoiding hemorrhage as much as possible. The skin remaining upon the chin was pared symmetrically into an angular form, the angle pointing upward and situated in the median line. The two cheek-flaps were now glided forward edgewise and made to meet by their anterior edges at the symphysis,

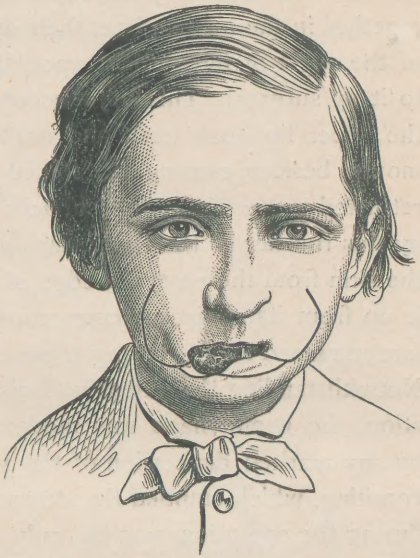

FIG. 3. Patient's condition before any operation was performed. The under lip is entirely gone and the end of the tongue exposed to view.

where they were secured together by two pin-sutures below and three fine thread-sutures at the lip-border. On either side of this line of junction, where the cheek-flaps came together in the median line, their inferior edges stood astride of the angle of integument upon the chin, and were secured to it by sutures. This adjustment had the effect of folding the upper lip upon itself and obliterating the angles of the mouth, besides causing the folded upper lip to overhang the retracted under lip. The surfaces left bare on both cheeks by this transfer of the cheek-flaps were covered by advancing the skin from the posterior edge of the wound after dissecting it up from its subjacent connections. No raw surface therefore remained after securing these edges together by sutures. Notwithstanding the extensive incisions required in this operation, the hemorrhage was moderate, and was not followed by any marked depression of the pulse. A single attack of vomiting, which emptied the stomach of the blood swallowed during the operation, was the only disturbance occasioned by the long-continued administration of the ether. To maintain the warmth of the parts they were protected with a covering of woven lint. The inflammatory tumefaction that followed during the three or four days succeeding the operation was moderate, as was also the febrile reaction. On the second day I began removing the alternate thread-sutures and changing the yarn on the pins. Special care was required to maintain in close contact the edges of the flaps, where they met together over the symphysis menti and along on both sides of the chin, where the saliva was liable to escape between the sutures. On the right side of the chin, where the tongue was in contact with the parts on the inside of the mouth, and exerted some forward pressure, saliva did escape between the sutures and prevented adhesion from taking place. At all other points primary union was secured. To accomplish it, however, fresh pins as well as fresh sutures had to be inserted at those points where the old ones were beginning to excite

suppuration by their prolonged presence. The administration of nourishment was managed by his mother, whose long experience enabled her to do it very successfully. On the right side of the chin, union having failed to take place for a distance of about two inches from the symphysis, it became necessary to resort to another operation for the closure of the aperture.

Second Operation.

October 30th—Both edges of the opening remaining on the right side of the chin having cicatrized, they were pared afresh. The lower edge was dissected up from the jaw to facilitate its eversion, and the upper edge was cut across at both ends for the same purpose. The two edges were then accurately confronted and secured together by six pin-sutures and nine intermediate silver wire sutures. By this means the wound was made impermeable to saliva.

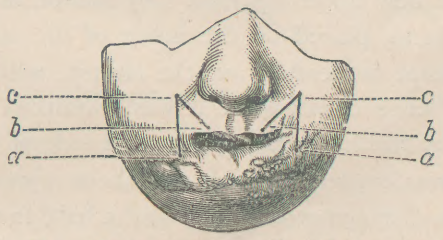

Fig. 4. The new mouth; upper lip, folded upon itself, protruding and overhanging the short, retracted under lip.

November 4th—The last suture was removed to-day, and union found to have taken place at all points except one, where an opening of the size of a goose-quill allowed the saliva still to escape.

November 15th—Under repeated applications of nitrate of silver, and the constant support afforded by adhesive plaster, the opening has now permanently healed.

The mouth as now reconstructed presents a somewhat circular form; the upper lip being folded upon itself, increased in thickness, and overhanging the under lip, which is retracted and tense. To restore the angular shape of the mouth and equalize the length of the two lips was the object to be accomplished by the following operation, which was performed on the 30th of November.

Third Operation.*

The method of performing this operation is new and differs essentially from any hitherto described in the annals of operative surgery. To secure the utmost precision in making the requisite incisions, their course was first designated by pins temporarily inserted erect in the skin. For example, on either side of the chin a pin was inserted at a finger's breadth below and to the outside of the mouth, and located so that both should be equidistant from the median line and on the same horizontal level (*a a*, fig. 4.) A pin was also inserted at the margin of the vermilion border of the upper lip on either side, so that both pins should be equidistant from the median line, and at such a distance apart as would leave between the two pins sufficient length of lip-border to form a new upper lip (*b b*). By aid of the fore-finger of the left hand, placed on the inside of the mouth, the left cheek was kept moderately on the stretch, while with a sharp-pointed Beer's cornea-knife it was transfixed at the point *a*, marked by the lower pin on the left side of the chin. The incision was carried through the cheek upward and a little outward, a distance of one inch and a half, to a point near the middle of the cheek (*c*). The left half of the upper lip was then transfixed at the point *b*, marked by a pin on the vermilion border, and an incision carried through the lip and cheek outward and a little upward to join the first incision at its terminus (*c*) in the middle of the cheek. A triangular patch was thus formed, which included the entire thickness of the cheek, having its apex free and disconnected, while its base remained attached on the side toward the mouth. The next step was to transfer this patch from the cheek to the side of the chin. For this purpose an incision was made on the side of the chin from

* Dr. J. A. Estlander, Professor in Helsingford (in Langenbeck's Archives, 14 Band, 3 Heft, 1872), has reported an operation for supplying loss of the lip somewhat similar to the author's.

the starting-point (*a*) of the first incision downward to the edge of the jaw and to the depth of the periosteum. The edges of this incision, yawning wide apart, afforded a V-shaped space for the lodgment of the triangular patch, which was then brought round edgewise and adjusted by sutures in its new locality. By this transfer the portion of upper-lip border which formed a part of the base of the patch was brought into a transverse line continuous with the under lip, and constituting an extension of it. The space upon the cheek from which the triangular patch had been taken was then closed, by bringing its edges together and securing them in contact by sutures. By this adjustment of the parts a new angle was formed for the left side of the mouth at the point *b* on its vermilion border, where the upper lip had been transfixed. The left half of the mouth thus reconstructed presented a natural shape, and consisted of natural lip-border with lining mucous membrane.

Fourth Operation.

On the 4th of January, 1870, the same operation was applied to the right side of the mouth. Some fear was entertained that sloughing might take place on this side of the face, from the presence of numerous cicatricial lines resulting from previous operations. Nevertheless primary union followed the operation as it did the preceding, except at the apex of the triangular patch in its new locality on the right side of the chin, where a slough formed, and was in due time cast off. The extent of the slough was, however, so limited as not at all to impair the result of the operation. At the end of the third day the last suture was removed, and strips of adhesive plaster were applied to support the newly-united parts. The final result obtained by these two operations was the restoration of the mouth to its natural shape, except at one point in the right half of the under-lip border, where a notch still existed and permitted the saliva to escape uncontrolled from

the mouth. This defect in the result of the last operation was owing partly to an original deficiency of material on the right side of the chin, and partly to the right half of the under-lip border having dropped below the level of the left half in uniting with it in the median line. The patient spent the following summer in the country, and returned to the city in October much improved in health. The parts involved in the previous operations had also improved; they, as well as the cicatricial lines intersecting them, had regained a good degree of softness and pliability.

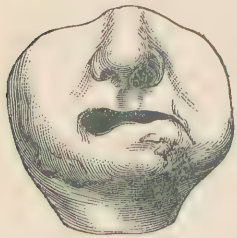

FIG. 5. Condition at this time.

FIFTH OPERATION.

October 5, 1870—The design of this operation was to fill up the notch on the under-lip border. It was executed as follows: The border of the notch was split lengthwise vertically through its middle, and the edges on both sides of the split were pared off beveling, so as to increase the thickness of the fresh-cut surface. The upper lip was then transfixed at the middle of its right half, and an incision carried toward and around the right angle of the mouth, so as to detach a strip of lip-border half an inch wide, including the angle with which to fill up the notch. The strip was brought around lengthwise and secured to the fresh-cut edge of the notch by fine thread-sutures inserted close together. This operation diminished materially the defect in the right half of the under lip, but did not entirely prevent the escape of saliva. At the same time, however, the operation had diminished the dimensions of the mouth, and converted the angle on the right side of the mouth to a circular turn. These defects rendered further operative procedures necessary.

Sixth Operation.

April 12, 1871 — The object of this operation was the restoration of the angular shape of the mouth on the right side. It was accomplished by carrying an incision very accurately along the line separating the vermilion border from the skin around the circular half of the mouth, and extending to an equal distance on the upper and lower lips. The incision penetrated to the depth of the mucous membrane on the inside of the lip, but did not divide it. A sharp-pointed, double-edged knife was then inserted between the skin and mucous membrane at the middle of the incision, and, being directed flatwise toward the cheek, was made to separate them from each other in the direction in which the mouth was to be enlarged. The detached skin was thus first divided with strong scissors on a line with the commissure of the mouth and to a distance of three quarters of an inch. The underlying mucous membrane was next divided in the same direction, but not as far out as the skin. The skin and mucous membrane were then secured together by a single thread suture passed through them at the angles of the incisions just made. A new lip-border was then shaped above and below by paring the edges first of the skin, then of the mucous membrane, in such a manner that the latter would overlap the former after they had been secured together by fine thread-sutures inserted at short intervals. A good result followed, and the natural angular shape of the mouth was restored.

Again the patient spent the summer in the country, and on his return to the city, in September, a further improvement in the condition of his face was observable. Still, however, the mouth, though restored to its natural angular shape on the right side, was scanty in length. A shallow notch in the right half of the under-lip border also still remained, and allowed some escape of saliva, especially when the head was inclined forward and his attention was not directed to

controlling it. After a little persuasion, seconded by his mother's influence, the patient consented to a final operation for the remedying of the defects still remaining. It was performed on the 23d of September, 1871, as follows.

Seventh Operation.

The first step of the operation was to enlarge the mouth on the right side by extending the angle further outward. This was accomplished by repeating the sixth operation as just described. The next step was to obliterate the notch on the right half of the under-lip border. To accomplish this the following operation was performed: Two incisions, commencing on either side of the notch a little below the lip-border, and extending through the entire thickness of the lip, were carried downward in converging lines that met below the chin. The included triangular patch, having for its base the notched portion of the lip-border, and retaining its connection for support on both sides of the notch, was pushed upward, and secured on a higher level by bringing together the edges of the wound below the patch, and securing them in contact by a pin-suture wound with cotton-yarn. A second pin-suture was inserted higher up and made to traverse both edges of the wound, as well as the patch interposed between them; an additional thread-suture below completed the adjustment. Primary union without any sup-

Fig. 6. Condition in March, 1872.

puration followed, and on the third day the last suture was removed.

The final result of these operations is that the patient's mouth is of natural shape, symmetrical, and of good dimensions. The saliva no longer escapes uncontrolled. The lips perform their natural motions, and articulation is not at all affected. Fig. 6, representing his condition in March, 1872, was engraved from a photograph. At the present time—March, 1873—still further improvement is noticeable. The numerous cicatricial lines, intersecting the surface on both sides of the chin and cheeks, have shrunken to the level of the adjacent surface, and they, as well as the skin itself, are perfectly supple and pliable.